

# ENGINEERING AND SCIENCE

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## “FOR OUTSTANDING SERVICES . . .”

ON OCTOBER 4, at a special Convocation of the Caltech faculty, student body, members of the Institute Board of Trustees, Associates, and friends, five Institute scientists received the Medal for Merit, the highest civilian award for outstanding contributions to the war effort.

Medals were presented to Dr. Lee A. DuBridge, Institute President; Dr. William A. Fowler, Professor of Physics; Dr. Max Mason, Research Associate; Dr. Linus Pauling, Chairman of the Division of Chemistry and Chemical Engineering, and president-elect of the American Chemical Society; and Dr. Bruce H. Sage, Professor of Chemical Engineering.

The ceremony was held in Dabney Garden with James R. Page, chairman of the Caltech Board of Trustees, presiding. The medals were presented jointly by Maj. Gen. W. M. Robertson, deputy commanding officer of the Sixth Army, and Rear Admiral Bernhard H. Bieri, USN, commandant, Eleventh Naval District.

The awards, and the individual citations:

### DR. LEE ALVIN DUBRIDGE

For exceptionally meritorious conduct in the performance of outstanding services to the United States from November, 1940 to January, 1946, as Director of the Radiation Laboratory at the Massachusetts Institute of Technology, and as a member of Division 14 and of Division 15 of the National Defense Research Committee. As head of the small group of enthusiastic young scientists gathered together to form the Radiation Laboratory in the fall of 1940, his extraordinary ability to win the confidence and support of his colleagues and his far-sighted wisdom were responsible for the creation of a smoothly working team that grew to include almost four



thousand persons. Under his capable guidance the Laboratory pushed the development of microwave radar forward with almost incredible speed, resulting in quantity production of a host of radar equipments used to telling advantage by our armed forces and those of our Allies. He encouraged the formation of civilian field agencies for direct assistance to the armed services in combat theaters, and gave effective support to their efforts by supplying Laboratory personnel and facilities. Through his unusual gifts as a scientist and as a leader of men, and his selfless devotion to the critical tasks at hand, Dr. DuBridge made a unique contribution to the war effort.

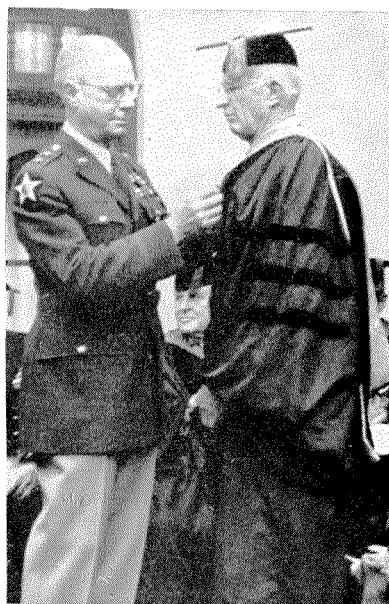
### DR. WILLIAM ALFRED FOWLER

For exceptionally meritorious conduct in the performance of outstanding services to the United States from October, 1940 to December, 1945. Dr. Fowler served first as Consultant to the Division of Rocket Ordnance of the National Defense Research Committee, OSRD, and later as Assistant Director of Section L, the larger of the two sections of that Division. The Chief and members of the Division depended to a large extent upon his wise counsel in outlining their program of rocket research and development. As a leader of the large group of investigators on the Pacific Coast who were working closely with the Navy, he contributed materially to the development of anti-submarine rockets, barrage rockets for amphibious warfare, high velocity aircraft rockets, anti-aircraft rockets, as well as a number of other powerful weapons, all of which were produced in quantity in time to be put into effective use in practically every theater of operations. In the spring of 1944, he made a trip through the South and Southwestern Pacific Theaters, where he consulted at length with groups already using rockets. As a result of his talks he sent back to the group in California many suggestions for improvements and new developments which intensified the research on rocket problems, and wherever he went he was able to give valuable advice to the troops concerning the most effective use of rockets. . . . When the war ended and much of the responsibility for rocket development was transferred to the Naval Ordnance Test Station at Inyokern, California, Dr. Fowler . . . gave extremely valuable assistance to the Navy, helping to get the Research and Development Department in operation.



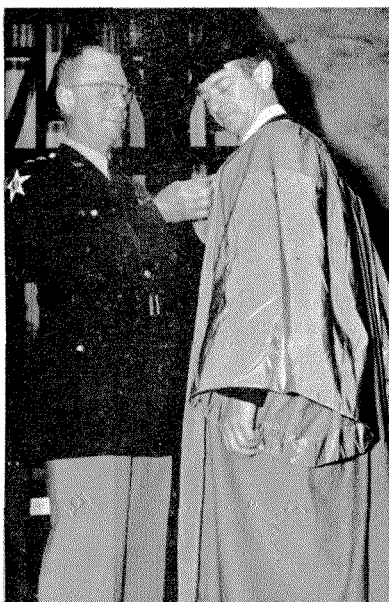
### DR. MAX MASON

For exceptionally meritorious conduct in the performance of outstanding services to the United States from June, 1941 to December, 1945. Dr. Mason, as a member of the Division of Sub-Surface Warfare of the National Defense Research Committee, OSRD, from June, 1941 to May, 1944, played a most important role in the formation of the research program of that Division. Moreover, from September, 1941 to December, 1945, he was the directing head of a project devoted to a study of the underwater behavior of bombs, torpedoes and depth charges. This investigation, which was the subject of a contract between the OSRD and the California Institute of Technology, yielded a vast amount of information which was essential to the successful prosecution of the work of both the Division of Sub-Surface Warfare and the Division of Rocket Ordnance. Dr. Mason established facilities for this important study at Morris Dam, near Pasadena, and devised instrumentation which gave an accurate record of underwater trajectory and speed of descent of experimental rockets, bombs, and torpedoes, and also of the arming depth and impact functioning of the fuzes being tested. He also developed the devices for dropping or launching the various types of projectiles under study. His work led directly to improvements in the design of . . . antisubmarine weapons. Later he established a second laboratory at the Institute for a study of . . . small scale models of such weapons . . . and evolved a fundamental theory which brought the basic concepts of small-scale modeling into a more serviceable relationship with full-scale performance . . .



### DR. LINUS CARL PAULING

For exceptionally meritorious conduct in the performance of outstanding services to the United States from October, 1940 to June, 1946. Professor Pauling, distinguished in chemistry and physics, as section and division member of the Explosives Division, consultant of the Divisions on Chemistry and on Rockets, member of the Consultant Panel of the Committee on Medical Research, and Chairman of an ad hoc Committee on Internal Ballistics of the National Defense Research Committee, turned his imaginative mind to research on military problems with brilliant success. His chromatographic method of analysis is used wherever investigations of rocket powder are under way. His studies of stability and surveillance methods were helpful in all powder developments. He led the way to an oxygen deficiency indicator for submarines and aircraft; and carried out important work on a substitute for human serum. His proposal for the use of rate control strands made the castable double base powder program more effective and widened the field of application. His contributions in the field of medical research and of explosives, among other contributions to the war effort, were brilliant. Professor Pauling's aid and advice made possible many of the war achievements in new materials and instruments required by the Armed Forces.



## DR. BRUCE HORN BROOK SAGE

For exceptionally meritorious conduct in the performance of outstanding services to the United States from 1941 to 1946. Dr. Sage, as a Consultant to the Division of Rocket Ordnance of the National Defense Research Committee, OSRD, and later as a key investigator and supervisor of the Propellant and Interior Ballistics Section of the Pacific Coast rocket research group, played a most vital and important role in the development of rockets for military purposes. He contributed immeasurably to the solution of the basic problem on which all further development in the rocket program depended: that of devising apparatus and techniques for the dry extrusion of ballistite for rocket propellant grains. A satisfactory means of producing this rocket fuel in quantity was essential both to the continuance of the investigative program and to the production of rockets for use in combat. He and his staff designed a suitable press and pilot plant for the production of rocket propellant and supervised its construction, the procurement of equipment for it, and its operation through an adequate trial period. Mass production of the propellant was achieved in time to permit various types of rockets to become standard equipment with our fighting forces, and to contribute materially to the shortening of the war. When the transfer of much of the responsibility for rocket development was made to the Naval Ordnance Test Station, Inyokern, California, Dr. Sage continued to devote much of his time, through the summer of 1946, to the work there . . . to assist in establishing the program of investigations in the field of interior ballistics.



## FURTHER HONORS FOR CALTECH

OF THE THOUSANDS of scientists who worked under the auspices of the Office of Scientific Research and Development during the war, only 65 throughout the country have been chosen to receive the Medal for Merit. The five medals presented at the Institute last month make a total of nine Medal for Merit awards to go to Caltech scientists. Those who received the award previously are Dr. Theodore von Karman, Professor of Aeronautics, director of the Daniel Guggenheim Laboratory, and Scientific Advisor to the U. S. Air Forces; Dr. Charles C. Lauritsen, Professor of Physics and director of the war-time rocket project at Caltech; the late Dr. Richard Chace Tolman, member of the National Defense Research Committee, and advisor to the government on atomic energy; and Dr. H. P. Robertson, Professor of Mathematical Physics.

At another ceremony last month, at the University of California in Los Angeles, 26 scientists received the Presidential Certificate of Merit, while 48 were awarded the War-Navy Certificate of Appreciation.

The Caltech scientists who received these awards:

### PRESIDENTIAL CERTIFICATE OF MERIT

Dr. Carl David Anderson, Professor of Physics  
Dr. Ira Sprague Bowen, Director, Mt. Wilson Observatory  
Dr. Leverett Davis, Jr., Asst. Professor of Physics  
Dr. William Noble Lacey, Professor of Chemical Engineering; Dean of Graduate studies.  
Dr. Thomas Lauritsen, Professor of Physics  
Dr. Frederick Charles Lindvall, Professor of Electrical and Mechanical Engineering; Chairman, Div. Civil & Mech. Engineering & Aeronautics  
Dr. Henry Victor Neher, Professor of Physics.  
Dr. Carl C. Niemann, Professor of Organic Chemistry  
Dr. Ernest Charles Watson, Professor of Physics; Dean of Faculty; Chairman, Div. Physics, Astrophysics, Math., and Electrical Engineering  
Dr. Don M. Yost, Professor of Inorganic Chemistry

### WAR-NAVY CERTIFICATE

Dr. Horace W. Babcock, Research Associate, Mt. Wilson Observatory  
Dr. Ralph E. Byrne, Jr., former Associate Professor of Applied Mechanics (Posthumous Award)  
Dr. Robert B. Corey, Research Associate, Structural Chemistry  
Dr. Robert T. Knapp, Associate Professor of Hydraulics Engineering; Director, Hydrodynamics Lab.  
Dr. Joseph B. Koepfli, Research Associate in Chemistry  
Dr. Paul E. Lloyd, Department of Physics  
Dr. William R. Smythe, Professor of Physics  
Dr. Royal W. Sorensen, Professor of Electrical Engineering  
Dr. James H. Sturdivant, Professor of Chemistry  
Mr. Charles H. Wilts, Asst. Prof. of Applied Mechanics.



Robertson



von Karman



Tolman



Lauritsen